

PATENT COOPERATION TREATY

REC'D 27 FEB 2006

WIPO

PCT

PCT

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/JP2005/009588

International filing date (day/month/year)
19.05.2005

Priority date (day/month/year)

International Patent Classification (IPC) or both national classification and IPC
G05B19/418, H05K13/08

Applicant
MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



European Patent Office - P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk - Pays Bas
Tel. +31 70 340 - 2040 Tx: 31 651 epo nl
Fax: +31 70 340 - 3016

Authorized Officer

MESEGUER MAYORAL, J

Telephone No. +31 70 340-3312



**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/JP2005/009588

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material:
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing:
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/JP2005/009588

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 13-23

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for the whole application or for said claims Nos. 13-23

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form

☐ has not been furnished

☐ does not comply with the standard

the computer readable form

☐ has not been furnished

☐ does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.

☐ See separate sheet for further details

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/JP2005/009588

Box No. IV Lack of unity of invention

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has:
 - ☐ paid additional fees.
 - ☐ paid additional fees under protest.
 - ☒ not paid additional fees.
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is
 - ☐ complied with
 - ☒ not complied with for the following reasons:
see separate sheet
4. Consequently, this report has been established in respect of the following parts of the international application:
 - ☐ all parts.
 - ☒ the parts relating to claims Nos. 1-12, 24, 25

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-12,24,25
	No: Claims	
Inventive step (IS)	Yes: Claims	3-8
	No: Claims	1,2,9-12,24,25
Industrial applicability (IA)	Yes: Claims	1-25
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item IV

Lack of unity of invention

1. The claims are grouped according to their inventions as follows:

I. Claims 1-12,24,25; directed to a method, apparatus and program for configuring a component mounting production line.

II. Claims 13-23; directed to a method for monitoring the process of a production line.

The only common concept is the production line for mounting components on printed circuit boards. This kind of production line is well known in the state of the art (see the abstract of US6378200).

2. The purpose of the invention defined by group I is to create a schedule for mounting components on a printed circuit board, so that the assembly line will be balanced.

The purpose of the invention defined by group II is to monitor the actual component mounting process to detect deviations, and to appropriately control the process to correct those deviations.

Consequently,

i) the common concept is not a special technical feature within the meaning of PCT Rule 13.2, second sentence, since it makes no contribution over the prior art, and
ii) no technical relationship within the meaning of PCT Rule 13 between the different inventions can be seen.

3. The application relates to a plurality of inventions, or groups of inventions, in the sense of Rule 13.1 PCT. They have been divided as defined above. If the applicant pays additional fees for the not yet searched group of invention, then the further search may reveal further prior art that gives evidence of a further lack of unity 'a posteriori' within the not yet searched group. In such a case only the first invention in this group of inventions, which is considered to lack unity of invention, will be the subject of a search. No further invitation to pay further additional fees will be issued. This is because Article 17(3)(a) PCT stipulates that the ISA shall establish the International Search Report on those parts of the international application which relate to the invention first mentioned in the claims and for those parts which relate to inventions in respect of which the additional fees were paid. Neither the PCT nor the PCT guidelines provide a legal basis for further invitations to pay further additional search fees (W17/00, point 11 and W1/97, points 11-16).

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Reference is made to the following documents:
D1: US-B1-6 378 200 (LIM KA TIEK ET AL) 30 April 2002 (2002-04-30)
D2: US-A-5 177 688 (RENTSCHLER ET AL) 5 January 1993 (1993-01-05)
- 2 MAJOR CLARITY OBJECTIONS
The application does not meet the requirements of Article 6 PCT, because **claims 1, 2, 5, 10 and 11** are not clear, for the following reasons:
 - a. For **claim 1**.
 - i) The wording "...which targets at production line..." is unclear. This unclear wording has been used also in **claim 10**.
This seems to be a typographical error.
 - ii) The wording "...in which the device or another device that configures the production line allocates components to be mounted..." is unclear.
Which device is allocating the components to be mounted?
 - iii) The wording "...in such a manner that mounting time at each component mounting machine is equalized..." is incoherent with the teachings of the description of the application. Figures 14(b) and 15(b) show schedules where the "mounting time" at each component mounting machine are not equal.

This unclear wording has been used also in **claim 9**.

b. For **claim 2**.

The whole wording of this claim is confusing and leaves the reader in doubt as to the meaning of the technical features to which it refers.

i) It is not clear what is meant by the wording "...carried out by a device which does not require optimization of that device itself".

ii) In page 15, lines 13-20 of the description of the application, it is said that the first embodiment does not "dispose" (*does this mean "not need"?*) a higher-level device for allocating components to be mounted, but that "it is designed in such a manner that the component mounting machine itself and another device which configures the production line carry out the suchlike allocation of components...".

What device is allocating the components to be mounted, the component mounting machine or another device? And which exactly is that other device? It looks obvious that there is some missing technical feature in the wording of claim 2.

iii) The wording of **claim 3** is more specific and clearly specifies the device that is allocating the components to be mounted.

c. For **claim 5**.

The wording "... a step of obtaining a connecting position in the production line...", used in claim 5, is completely unclear and leaves the reader in doubt as to the meaning of the technical features to which it refers.

3. INVENTIVE STEP OBJECTIONS

Furthermore, the above-mentioned lack of clarity notwithstanding, the subject-matter of **claims 1, 9-12, 24 and 25** does not involve an inventive step in the sense of Article 33(3) PCT, and therefore the criteria of Article 33(1) PCT are not met.

a. For **claim 1**.

Document D1, regarded as being the closest prior art to the subject-matter of claim 1, discloses a line balance control method for a production line having a plurality of component mounting machines that mount components on a substrate (*column 1, lines 6-11*).

Document D1 discloses prior art methods to allocate components to mounting machine components in order to balance the line (*D1; column 3, lines 51-60*), but does not go into detail describing these methods.

The problem to be solved by claim 1 may therefore be regarded as what technical steps to follow in order to initially configure the production line, so that a certain line balance is achieved.

The method to configure the production line, by allocating components to be mounted to each component mounting machine of the component line, described in the description of the application (*application; first embodiment; pages 15-32; figures 1-15*), and **unclearly claimed in claim 1**, is completely disclosed in document D2:

- i) The "possibility inquiring step" is disclosed in column 9, lines 53-63 of D2.
- ii) The "allocating step" is disclosed in column 3, line 66 to column 9, line 12 of D2.

Therefore, this method is described in document D2 as providing the same advantages as in the present application (*D2; column 3, lines 24-32*). The skilled person would therefore regard it as a normal option to use such a method in the system described in document D1 in order to solve the problem posed.

Thus, the solution proposed in claim 1 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT).

- b. The same argumentation given for claim 1 above is also valid, *mutatis mutandis* for **claims 9-12, 24 and 25**.

4. The combination of the features of dependent **claim 3** is neither known from, nor rendered obvious by, the available prior art.

The use of the controller of one of the machines of the production line to carry out the line balancing method allows the component mounting system to do without a central control unit, thereby reducing the costs of the system (*see the description of the application; first paragraph of page 2; second paragraph of page 3; last paragraph of page 34*).